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Burnout and occupational stress in the medical residents of Oncology, Hematology and Radiotherapy: A Prevalence and Predictors Study in Portugal

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Abstract

Burnout is a professional syndrome associated with stress caused by overwork. Our aim was to calculate the prevalence of burnout and stress on medical residents of Oncology, Haematology and Radiotherapy in Portugal, as well as to determine predictors of burnout and stress. An anonymous questionnaire was applied (n = 118). Statistical analysis consisted of a descriptive and inferential analysis. The prevalence of burnout and stress was calculated to be 45.2 and 50%, respectively. The dimensions that generated higher levels of stress were ‘dealing with patients’ and ‘overwork’. Burnout was directly related with stress dimension ‘overwork’. The prevalence of burnout in Portuguese oncological residents is high as in other European countries and in the U.S. Therefore, interventional strategies can be designed.

Keywords: Burnout; Occupational stress; Oncology; Medical residents.

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Burnout is an emotional exhaustion syndrome caused by occupation stress that often occurs in human service professionals (e.g., teachers, psychologists, doctors and nurses) (Maslach and Jackson, 1981; Melo et al., 1999). Relationship between people and their jobs, as well as the difficulties that arise evolves negatively over time, as first reported in early 60's and 70's in the US (Maslach et al., 2001).

Burnout differs from occupational stress, as a result of prolonged exposure to multi-source stress (Melo et al., 1999). Studies have shown a high incidence of burnout within medical doctors, especially oncologists (Caplan, 1994; Grunfeld et al., 2000; Olkinuora et al., 1990; Theorell, 2000; Whippen & Canellos, 1991). Other studies suggested a prevalence of 25–35% among medical oncologists, 38% among radiotherapists and 28–36% among surgeons (Font, Corti, & Berger, 2015; Shanafelt & Dyrbye, 2012).

Moreover, it has been shown that burnout is highly prevalent in medical residents, mainly due to the intense stress, overload of work hours and increased responsibility (Dyrbye et al., 2008; Thomas, 2004). Burnout prevalence among French residents of Oncology, Haematology and Radiotherapy was evaluated in 44% (Blanchard et al., 2010) while in Italythe prevalence of burnout in young radiotherapists was determined to be 35% (Ciammella et al., 2011).

In Portugal, although there are some studies about burnout in health professionals (Gomes, Cruz, & Cabanelas, 2009; Gomes, Melo, & Cruz, 2000; Gonçalves et al., 2016; de Melo Silva & da Silva Gomes, 2009), the prevalence of burnout in medical residents is still unknown. Furthermore, few studies focus on the relationship between burnout and occupational stress and how both dimensions contribute adversely to healthcare delivery.

Therefore, our aims were to determine the prevalence of burnout and stress in Portuguese residents of Oncology, Haematology and Radiotherapy, and to identify possible predictors of both burnout and stress.

Method

Subjects and methods

A multicentre, cross-sectional study was conducted in Portugal, between April and May 2011. All procedures were in accordance with the ethical standards of the IGH-GCP guidelines and with the Declaration of Helsinki. The study questionnaire and the informed consent was approved by the Psychology School of University of Minho. The questionnaire was composed by demographic, labour and personal questions followed by application of two instruments: Stress Questionnaire for Health Professionals (SQHP) and Maslach's Burnout Inventory – Human Service Surveys (MBI-HSS) previously translated to Portuguese and validated (Gonzaga, 2003). Their internal consistency assessed by the Alfa Cronbach measurement resulted in good consistency values (.70–.90).

Statistical analysis was divided in three parts: descriptive analysis, double variable inferential analysis and multiple inferential analysis. On the double variable inferential analysis, burnout and stress dimensions averaged values were compared between the three specialties. The multiple comparisons were made by the Bonferroni method (statistical significance for $p \leq .017$). On the multiple inferential analysis, to search for burnout and stress predicting factors, the independent variables ($p \leq .1$) were included on the hierarchical regression.

Statistical significance was established at $p \leq .05$, except in those cases mentioned above.

Results

Description of the sample

In total, 211 medical residents were completing the complementary internship on Oncology (58.3%), Haematology (25.6%) and Radiotherapy (16.1%), of whom 118 individuals responded to the questionnaire (response rate of 55.6%). Concerning all independent variables, the population was described for the three subgroups of specialty (Table 1).

Table 1. Population, global sample and specialty subgroups characteristics.

Characteristics		Oncology	Haematology	Radiotherapy	All
Population (total *n* of residents)		123	54	34	211
Sample (response rate)		67 (54.5%)	27 (50%)	24 (70.6%)	118 (55.9%)
Average age (years) (SD)		28.4 (2.4)	28.7 (1.8)	27.9 (2.4)	28.4 (2.2)
Gender: *N* (%)	Feminine	51 (76.1%)	21 (77.8%)	15 (62.5%)	87 (73.7%)
	Masculine	16 (23.9%)	6 (22.2%)	9 (37.5%)	31 (26.3%)
Marital state: *N* (%)	Married	18 (26.9%)	5 (18.5%)	4 (16.7%)	27 (22.9%)
	Single	44 (65.7%)	21 (77.8%)	18 (75%)	83 (70.3%)
	Other	5 (7.5%)	1 (3.7%)	2 (8.3%)	8 (6.8%)
Parenthood: *N* (%)		13 (19.4%)	2 (7.4%)	0	15 (12.7%)
Region: *N* (%)	North	36 (53.7%)	11 (40.7%)	7 (29.2%)	54 (45.8%)
	Central	15 (22.4%)	10 (37%)	10 (41.7%)	35 (29.7%)
	South and Islands	16 (23.9%)	6 (22.2%)	7 (29.2%)	29 (24.6%)
Internship year: *N* (%)	First	18 (26.9%)	6 (22.2%)	8 (33.3%)	32 (27.1%)
	Intermediate	35 (52.2%)	15 (55.6%)	14 (58.3%)	64 (54.2%)
	Final	14 (20.9%)	6 (22.2%)	2 (8.3%)	22 (18.6%)
Overtime work: *N* (%)		40 (59.7%)	17 (63%)	12 (50%)	69 (58.5%)
Hobby: *N* (%)		48 (71.6%)	22 (81.5%)	20 (83.3%)	90 (76.3%)
Physical Exercise: *N* (%)		35 (52.2%)	15 (55.6%)	15 (62.5%)	65 (55.1%)

Prevalence of burnout and stress

One hundred and fifteen physicians responded to MBI-HSS. In global, burnout prevalence was 45.2%. The SQHP general level of stress question was responded by 106 physicians (89.8%) and a 50% stress prevalence was observed. Furthermore, it was verified that ‘dealing with patients’ and ‘work excess’ play an important role on generating higher average levels of stress while ‘career and remuneration’ was associated to low average levels of stress.

The results obtained from the comparison between the three specialties average values of each burnout and stress dimension are presented in Table 2. The dimensions with potentially significant differences ($p \leq .10$) were pair compared (Table 3). It was observed that Oncology residents had higher levels of ‘depersonalization’ and of stress related with ‘dealing with patients’ than Radiotherapy residents.

Table 2. Specialty comparison of stress and burnout dimensions' average levels.

Dimensions		*t*(df); *p*
Burnout	Emotional exhaustion	$t(2) = 5.001; p = .082$
	Depersonalization	$t(2) = 9.572; p = .008$
	Personal accomplishment	$t(2) = .076; p = .963$
Stress	Dealing with patients	$t(2) = 7.006; p = .030$
	Professional relationships	$t(2) = 4.956; p = .084$
	Work excess	$t(2) = 3.306; p = .191$
	Career and remuneration	$t(2) = 5.748; p = .056$
	Training events	$t(2) = 3.708; p = .157$
	Family problems	$t(2) = 4.287; p = .117$

Legends: *t* – *t* value; df – degrees of freedom; *p* – *p* value. Significant differences: $p \leq .10$.

Table 3. Comparison of average levels of stress and burnout dimensions in pairs of specialties.

		Mean rank				
Dimensions		Medical oncology	Haematology	Radiotherapy	*Z*	*p*
Burnout						
	Emotional exhaustion		27.46	21.28	−1.529	.126
		44.18		31.37	2.233	.026
		42.16	40.00		−.378	.705
	Depersonalization		26.54	22.28	−1.058	.290
		45.42		28.30	2.990	.003
		44.43	34.82		−1.686	.092
Stress						
	Dealing with patients		26.32	22.52	−.945	.345
		45.13		30.59	2.532	.011
		44.53	36.12		−1.472	.141
	Professional relationships		22.48	26.70	1.045	.296
		41.68		39.28	.415	.678
		46.10	32.48		−2.369	.018
	Career and remuneration		19.15	28.25	2.304	.021
		39.09		44.20	−.881	.379
		44.66	33.85		−1.874	.061

Predictable factors of burnout and stress

To obtain the potentially predicting variables, a Spearman correlation was performed between the independent variables and the dimensions of burnout (Table 4) and stress (Table 5).

Hierarchical regression results to predict each dimension of burnout and stress through the independent variables, which had a potentially significant correlation ($p \leq .10$), are described in Additional file (tables 1–8). The dimension that appeared to be predicable was the burnout dimension 'emotional exhaustion'. The biggest predictor was stress through 'work excess' (Figure 1), followed by stress through 'dealing with patients'. Furthermore, the specialty Radiotherapy and 'having a hobby' were predictors of 'emotional exhaustion' in reverse order.

Table 4. Relationship between the defining dimensions of burnout with the independent variables.

		Emotional exhaustion		Depersonalization	
Category	Independent variable	R_s	p	R_s	p
Demographics professional and personal characteristic	Gender	.01	.9	−.66	.501
	Age	.00	.993	−.05	.599
	Marital status	.00	.993	.04	.716
	Parenthood	.12	.213	.13	.172
	Specialty	−.19	.046	−.30	.002
	Internship year	.90	.361	−.09	.370
	Workplace	−.01	.946	−.19	.052
	Work excess	.06	.534	.06	.548
	Hobbies	−.21	.029	−.05	.640
	Physical exercise	.12	.218	.02	.218
Stress dimensions	Dealing with patients	.23	.021	.18	.066
	Professional relationships	.19	.044	.15	.140
	Work excess	.42	.000	.25	.011
	Career and remuneration	.13	.183	.14	.173
	Training sessions	.15	.134	.17	.092
	Family problems	.10	.339	.07	.460

Legend: R_s – Spearman correlation coefficient; p – p value.

Table 5. Relationship between the stress dimensions and the independent variables.

Independ. variable	Dealing with patients		Professional relationships		Work excess		Career and remuner.		Training sessions		Family problems	
	R_s	p	R_s	p	R_s	p	R_s	p	R_s	p	R_s	p
Gender	.22	.026	.19	.050	.15	.117	.02	.839	.19	.059	.14	.148
Age	−.03	.734	.01	.913	−.16	.099	.05	.602	−.15	.141	−.22	.028
Marital status	.19	.057	.09	.339	−.07	.464	.14	.15	.16	.095	−.14	.150
Parenthood	.03	.780	.11	.246	−.04	.716	.19	.058	.03	.744	−.18	.066
Specialty	−.26	.008	−.13	.198	−.18	.070	.00	.991	−.07	.454	−.04	.701
Internship year	−.02	.817	.14	.158	−.08	.411	.01	.925	−.16	.100	−.13	.198
Workplace	−.10	.309	.26	.007	−.02	.819	.24	.014	−.06	.553	−.16	.246
Work excesso	−.19	.055	−.06	.522	−.04	.665	−.08	.417	.01	.930	−.07	.476
Hobbies	−.12	.216	−.15	.115	−.19	.050	−.06	.567	−.10	.317	−.08	.417
Physical exercise	.17	.091	.10	.329	.09	.347	.03	.751	−.04	.669	.03	.740

R_s – Spearman correlation coefficient; Independ. – Independent; remuner. – Remuneration. Significant differences: $p \leq .10$.

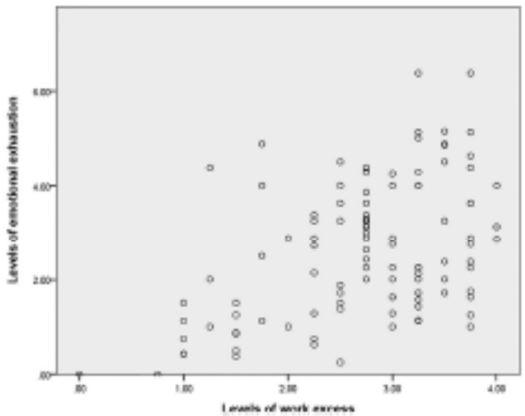

Figure 1. Relationship between the burnout dimension level 'emotional exhaustion' and the stress dimension level 'work excess'.

Discussion

The present study shows that prevalence of burnout among Oncology, Haematology and Radiotherapy Portuguese residents is as high as among the same specialities French residents (Blanchard et al., 2010). Also, the occupational stress was present in half of the respondents. The higher stress-generator dimensions were 'dealing with patients' and 'overwork', while the lower stress-generator dimension was 'career and payment'. Given the recent change in the employment situation of medical specialists to a more precarious reality, it is postulated that this dimension may cause higher levels of stress soon (Shanafelt & Dyrbye, 2012).

Comparing the three specialties, medical residents of Oncology show higher levels burnout and stress than those of Radiotherapy. One possible explanation is that the technical component can reduce the stress caused by contact with patients. Also, the results suggest that Radiotherapy residents adhere more frequently to activities compatible with a suitable coping (Penson, Dignan, Canellos, Picard, & Lynch, 2000).

As in the French study (Blanchard et al., 2010), the stress dimension 'overwork' was a strong predictor of burnout. This is consistent with the revision published by (Thomas, 2004), that established the take-home work and its interference with family life great predictors of medical residents burnout (Thomas, 2004). Stress dimensions have proved to be less likely predictable than the burnout dimensions as expected as stress constitutes an inherent individual response and evolution of stress to burnout depends on environmental factors (Thomas, 2004).

Although the present study provided a contribution to an area of knowledge still unexplored in Portugal, it shows some limitations, such as the fact that the study is based on self-registration measurements, which may overestimate the results obtained (Spector & Jex, 1991) and the fact that the translation and validation of the instruments (de Melo Silva & da Silva Gomes, 2009; Melo et al., 1999) were based on normative values of burnout dimensions of the U.S. population (Maslach & Jackson, 1981), as conducted in other studies (Blanchard et al., 2010; Font et al., 2015).

Currently, the results of burnout and stress in the medical population obtained in the cross-sectional studies like ours might be used to build and implement stress management programs or preventive structural reforms that aim to create support groups, the separation of work and personal life and the increase of the sensation of job control (Thomas, 2004). One strategy that seems to be useful in the residents is training in communication of bad news as well as in labour management (Blanchard et al., 2010; Shanafelt & Dyrbye, 2012). Another important strategy are effective coping mechanisms, depending on the tastes and personal life of each other (Penson et al., 2000).

Conclusions

This study showed that in Portugal the prevalence of burnout is high in residents of Oncology specialties and is directly associated with overwork as a stress dimension. Portuguese Medicine Faculties and Hospitals that receive medical residents should consider this information as a matter of concern and, further, develop prospective studies and interventional strategies to reduce the work load and consequent burnout in young physicians.

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Confit of Interest

The authors declare that they have no conflict of interest.

Ethical approval

All procedures performed in studies involving human participants were in accordance with the ethical standards of the IGH-GCP guidelines and with the Declaration of Helsinki. The study questionnaire and informed consent was approved locally by the Psychology School of University of Minho.

Informed consent

Informed consent was obtained from all individual participants included in the study.